

Theoretical foundations of the FUTRE method: An ecological approach to education foresight

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The crisis of relevance in education foresight

Schools are struggling with rapid technological change. The methods used to navigate technological shifts has all too often failed to provide useful results. This failure is not due to a lack of imagination, rather a mismatch between foresight tools and the reality of school practice. As new technology arrives faster than existing professional and ethical frameworks can adapt (De Jong, 2025), school leaders are often left reacting to changes rather than shaping them. This mismatch occurs because standard foresight methods tend to focus on the tools themselves rather than teachers', students' and school leaders' shifting opportunities for action. Without a focus on these relational shifts, foresight remains speculative and fails to inform the day-to-day decisions required in evolving educational environments.

The myth of lost agency

One of the primary reasons that foresight fails to land with practitioners is a persistent lean toward technological determinism. Many models treat technological change as an external force, i.e. a wave that schools must either adopt or endure. This perspective prioritizes the technical features of new tools over the professional environment where practice actually happens.

Thayer (2016a) argues that educators and leaders should be less concerned with the “look and feel” of a technology and more concerned with the environmental circumstances in which it is encountered. When the focus remains on what a machine can do, the agency of the user is marginalized. This results in what Melville et al. (2023) identify as a dominant narrative in Fourth Industrial Revolution (4IR) literature that is “overwhelmingly techno-economic rather than human-centric” (p. 738), with a narrow focus on technology-enabled benefits that ignores humanistic outcomes. Their review reveals that technological determinism is the first implicit assumption embedded in existing 4IR literature, an assumption that renders the future a *fait accompli* rather than a space of intentional action.

By failing to map the specific action-possibilities offered by a future environment, traditional foresight practices represent educators as passive recipients of change. The FUTRE method (Futures Unfolding Through Relational Ecologies) intervenes here by shifting the focus from the tool to the practitioner’s agency within an ecology transformed by novel technologies.

The theoretical divide: Direct perception vs. semiotic interpretation

The FUTRE method is centered around Gibson's (2015) concept of *affordances*. To adequately ground the method, it is necessary to resolve a significant conceptual conflict regarding the concept. In educational circles, the concept of affordance is almost exclusively associated with Donald Norman’s (2013) focus on *perceived affordances*, i.e. the visual cues that suggest how a tool should be used. While Norman’s formulation has proven its utility in instructional design and human-computer interaction, it represents a fundamental break from the Gibson's original ecological conceptualization.

The difference between Gibson's (2015) and Norman's (2013) formulations of the concept lies in Gibson's theory of *direct perception*. Gibson argued that organisms pick up information directly from their environment without the need for internal mental processing or the decoding of signs. The environment, in Gibson's account, does not communicate with us; information is simply present in the ambient array and "it is entirely up to us to perceive it" (Gibson, 2015, p. 57). Norman's concept is irreconcilable with this because it relies on the user's subjective interpretation of design cues. As Thayer (2016b) has noted, "Norman's affordances are not Gibson's affordances, yet the two confusingly go by the same name." (n.p.). We are left with two distinct concepts sharing a single term: Gibson's affordances, which are objective action-possibilities residing in the relationship between organism and environment and Norman's affordances, which are perceived design signals intended to guide user behavior.

As Oliver (2005) demonstrates, Norman's framework effectively recasts the environment as a form of communication. It "re-positions the user as a reader and the designer as an author, with design as a form of semiotics" (p. 407). Norman's own assertion that affordances "convey messages about their possible uses, actions and functions" is, as Oliver notes, "clearly at odds with Gibson's position that the world does not communicate with us" (p. 408). For foresight, this semiotic recasting is a methodological trap. If Norman's affordances are used in a workshop setting, the analysis is limited to participants' current mental models and expectations. This inevitably leads back to the "future-talk" problem where scenarios are constrained by what practitioners already believe or expect.

The problem of predetermined meaning: Dualism vs. emergent relations

A fundamental weakness in applying Norman's concept to foresight is its necessary reliance on a dualistic theory of meaning. In the Normanian tradition, affordances function as recognizable conveyors of meaning, i.e. intentional cues that a designer attaches to an object so that a user can decode them. A "knob" on an interface carries the predetermined meaning "pull me." This assumes that meaning is an independent entity, separable from the act of perception, waiting to be read. For design purposes, this assumption is functional. For foresight, it is fatal. Because the future has not yet occurred, there is no designer, no user and no pre-existing context from which to assign meaning. To treat future environments as though they come pre-labeled with intentions is to engage in precisely the speculative exercise that educational foresight claims to overcome.

Keane (2018) represents the most sophisticated attempt to resolve this problem from within a social framework. Keane argues that affordances are objective features that exist relative to a perceiving entity and that entity's activity. On the surface, this appears to bridge the gap between Gibson's objectivism and Norman's subjectivism in that it seems to offer affordances that are both real and socially situated.

Tim Ingold (2018) identifies this maneuver with precision. Keane, he argues, manages the tension by "trying to have it both ways, exactly as Gibson did" (p. 42). Keane correctly observes that perceiving and responding to affordances does not depend on mental representation. But he also insists that they are physically real and contingently relational at the same time. The result, in Ingold's assessment, is "an unsatisfactory compromise between a realist and a relational ontology. The affordance perspective, in Keane's approach, merely works as sticking plaster to cover it up" (p. 42). Crucially, Keane maintains that meaning ultimately requires semiosis, i.e. that we always interpret the world through signs. This is exactly what Ingold identifies as the fundamental obstacle: "Anthropology always wants to hide presence behind its signs, perception behind interpretation" (p. 41). By wrapping affordances in semiotic scaffolding, approaches like Keane's conceal the very thing Gibson's theory was designed to reveal; the direct, unmediated relationship between organism and environment.

For Ingold, perception is not a matter of decoding a solidified world of objects; it is the activity of being alive to a world that is always in formation. He proposes that we think of imagination “not as a capacity to construct images, or as a power of mental representation, but more fundamentally as a way of living creatively in a world that is not already created, already formed, but one that is itself crescent, always in formation” (p. 43). Meaning does not precede the encounter between actor and environment. It emerges from it. In his vivid formulation, “imagination sets us loose to fall; perception restores our grip so we can keep on going. One is aspirational, the other prehensile” (p. 43).

This distinction has direct methodological consequences for foresight. If we follow Keane (or Norman), we are forced to populate future scenarios with pre-assigned signs: “this technology means empowerment,” “this policy means constraint”; and then ask participants to decode them. The result is a foresight exercise limited by participants’ current semiotic repertoires: what they already know how to read. If we follow Ingold and Gibson, the task changes entirely. We do not ask what a future technology “means.” We ask what action-possibilities it makes available within a specific environment. As Thayer (2016a) argues, “it is the environment in which learning technologies are encountered that they should be concerned with, not the look or feel of the technologies that populate it.” Meaning is not the starting point of the foresight exercise; it is the outcome, emerging from participants’ active engagement with the relational ecology they are mapping.

The affordance landscape: Foresight as embodied scaffold

The preceding critique establishes what affordances are and how meaning arises from them. What remains is the question of application: how does an ecological theory of affordances justify a method for engaging with futures that do not yet exist? If the future has no pre-labeled meaning, on what basis can school leaders reason about it at all?

The affordance perspective itself provides the answer. As Melville et al. (2023) argue, it offers “a new and fruitful way of envisioning open and nondeterministic futures directed by humans rather than myopic ones driven by the needs of industry under the guise of inevitability” (p. 751). Their 4IR affordance conceptualization “stresses action possibilities and the fundamental role of human agency in deciding whether to enact them” (p. 750). The FUTRE method is not merely an academic preference for Gibson over Norman; it is a response to a documented failure in how technology-driven change is conceptualized.

Jeremy Gordon’s (2023) concept of the *affordance landscape* provides the necessary scaffold for operationalizing this corrective. Gordon argues that affordances render planning tractable by constraining an otherwise infinite search space. An organism navigating an uncertain environment does not evaluate every conceivable possibility; it attends to the action-possibilities that the environmental landscape actually supports. Planning, in this view, is not prediction. It is a form of “prospective mental simulation”: a perceptual rehearsal in which the organism models its own future actions within the constraints of a given landscape. The affordance landscape does not tell the organism what *will* happen; it specifies what *can be done* given a particular configuration of environmental and physiological constraints.

This reframing has immediate consequences for educational foresight. Traditional scenario planning asks school leaders to envision “what the future will look like”: a question that invites speculation, projection and the kind of “future-talk” that produces vivid but unactionable narratives. The affordance landscape reframes the question as “what will the future allow?” By forcing participants to attend to verbs rather than nouns, to actions rather than objects, the method taps into the same prospective simulation that Gibson’s organisms use to navigate their physical environments. A school leader reasoning about the affordance landscape of a future educational ecology is not predicting; they are perceiving the action-possibilities that a changed environment would support.

Xu et al. (2021) extend this logic temporally through what they term *deep affordance foresight*. Their framework demonstrates that effective planning requires modeling not just the immediate affordances of an environment, but the affordances that current actions will generate in subsequent states. An action taken now reshapes the environmental landscape, which in turn affords or constrains further action. Applied to educational foresight, this means that school leaders must reason not only about what a future technology allows in isolation, but about how current decisions, e.g. adoption, resistance, regulation, will reconfigure the affordance landscape over time. A decision to automate student feedback, for instance, does not merely afford efficiency in the *class* environment; it reshapes the *social* environment (parental expectations of human contact), which in turn constrains or enables further action-possibilities in the *world* environment (data governance, professional standards).

Together, Gordon and Xu et al. establish the theoretical warrant for what the FUTRE method asks participants to do: treat the future not as an abstract destination to be imagined, but as an affordance landscape to be mapped, navigated and, crucially, shaped through professional judgment. Foresight becomes an embodied, perceptual skill rather than a speculative or predictive exercise.

Mapping the relational ecologies of education

The task of foresight is to map the environmental landscape to see what actions it affords. The FUTRE method structures this landscape into three relational ecologies: the *class*, the *social* and the *world*.

The *class environment* is the immediate, material ecology of practice: physical and digital spaces, tools, platforms and daily routines. It is the ecology in which a teacher or school leader acts most directly: where lessons are delivered, where technology is encountered, where the texture of professional life is felt.

The *social environment* is the relational layer of expectations, standards and cultural norms. It includes parent expectations, professional standards bodies, collegial relationships, community values and the broader culture of the institution. This ecology does not act on practice directly; it shapes what is considered acceptable, desirable or legitimate.

The *world environment* is the systemic ecology of policy, global technological shifts and regulatory frameworks. National curriculum mandates, data privacy legislation, international assessment regimes and the global technology market all constitute invariant properties of this ecology that constrain or enable action at the class and social levels.

The “relational” aspect of the method is found in the tension between these layers. Traditional foresight often treats a tool as if it exists in a vacuum. In contrast, an ecological approach recognizes that an action-possibility in the class environment, such as automating personal feedback, is often constrained or made “difficult” by the world environment (e.g., data privacy laws) or the social environment (e.g., parental expectations of human-to-human contact). By mapping these layers, the method avoids the dualism of *immaterial* versus *material* environments. As Ingold (2018) suggests, the division between the real and the imaginary is unnecessary if we view imagination as a way of living creatively in a world that is constantly in formation. Meaning is not “attached” to a technology; it emerges from the specific, situated relationship between the leader’s professional goals and the constraints of their total environment.

Methodology: The five phases of the FUTRE method

The FUTRE method operationalizes the ecological framework described above through a structured, five-phase workshop process conducted on a collaborative platform (e.g., Miro or pen and paper). Each phase

corresponds to a specific theoretical commitment: from the initial perception of the environmental landscape, through the identification of action-possibilities, to the synthesis of a coherent professional narrative grounded in relational constraints. The orienting principle throughout is captured in the method's core facilitation stance: *imagination varies environments, while affordances emerge through action*. Participants are invited to imagine how environments might change. What they attend to, however, are the action-possibilities that would emerge from those changed conditions.

Phase 1: Look around - perceiving the environmental landscape

The first phase asks participants to attend to the environmental landscape of their practice across the three relational ecologies. Participants are not asked “what do you think the future will look like?”, a question that invites projection and speculation. Instead, they are asked to describe what is currently changing in the class, social and world environments. This is a perceptual task, not a predictive one. Participants identify observable shifts, e.g. changes in policy, emerging tools, evolving community expectations and locate them within the appropriate ecology.

The theoretical grounding here is Gibsonian: participants are learning to attend to invariant properties of the environment rather than projecting subjective interpretations onto it. Gibson (2015) insisted that information is present in the environment and that “the world does not communicate with the observers who inhabit it” (p. 57). The task is not to decode signals but to perceive what the environment offers “for good or ill” (p. 119). Phase 1 trains participants in this perceptual discipline.

Phase 2: Signals - identifying emergent action-possibilities

In the second phase, participants move from environmental description to the identification of signals, i.e. emerging affordances that indicate shifts in what professional practice will allow. Signals are not “trends” in the conventional foresight sense; they are early indicators that the affordance landscape is being reconfigured. A new data privacy regulation, for instance, is not a trend to be tracked but a signal that specific action-possibilities in the class environment, e.g., personalized AI tutoring, are becoming constrained by the world environment. In practice, participants work from inputs provided by facilitators or invited experts. These include short presentations, provocations or examples drawn from current research, policy debates or technological development. These inputs are not predictions; they are possible future conditions that help participants explore how the environmental landscape might be reconfigured.

This phase operationalizes the Ingoldian commitment to emergent meaning. Thayer (2016b) provides a crucial clarification: “for Gibson, meaning comes and goes while affordances are forever.” The affordance, i.e. the action-possibility, persists as long as the environmental landscape supports it. But its meaning to a particular practitioner in a particular ecology shifts as circumstances change. Participants are therefore tracking not changes in what is *possible* per se, but changes in what is *meaningful*: what action-possibilities now present themselves as relevant given the reconfigured relationships between ecologies.

To generate this meaning, participants use action-oriented sentence starters. These are structured prompts that foreground verbs and professional actions rather than opinions or beliefs. Examples include “Teachers can now...”, “School leaders must now...”, “Learners are no longer able to...” or “Some actions become slower, riskier or more constrained because...”. These prompts articulate the relationship between the signal and professional practice in terms of what can be done, not what is believed or expected.

Phase 3: Actions - mapping the affordance landscape

The third phase asks participants to map the affordance landscape explicitly. Using the signals identified in Phase 2, participants categorize the action-possibilities available to a school leader operating within the future environmental landscape. Actions are classified across three registers: *Possible* (action-possibilities the reconfigured environment clearly supports), *Difficult* (action-possibilities that exist but are constrained by tensions between ecologies) and *Constrained* (action-possibilities that the environment effectively forecloses).

This tripartite mapping reflects the relational character of the method. An action is never simply “possible” or “impossible” in isolation; its status depends on the specific configuration of the class, social and world environments at a given moment. This is where Gordon’s (2023) affordance landscape concept does its heaviest methodological work: it provides the structure within which participants can reason about future professional action without collapsing into either naïve optimism (everything is possible) or deterministic fatalism (the future is fixed). As Melville et al. (2023) argue, the affordance perspective stresses “the fundamental role of human agency in deciding whether to enact” action-possibilities (p. 750). The tripartite mapping makes this agency visible and actionable.

A persistent facilitation risk at this stage is what we refer to as *imagined affordances drift*. This drift occurs when participants articulate what people might *believe* they can do rather than what the environmental landscape actually *supports*. The theoretical distinction between Gibsonian and Normanian affordances needs to be operationalized here: foresight participants need to be redirected from beliefs and expectations to conditions and actions.

Phase 4: Day in the Life - synthesis through narrative

The fourth phase requires participants to integrate the affordances identified across all three ecologies into a single, coherent narrative: a “Day in the Life” of a teacher or school leader 10–15 years into the future. Unlike traditional scenarios that summarize high-level trends, these narratives are granular accounts of professional practice within a specific environmental landscape. They describe not what the future “looks like” but what a practitioner *does*: what actions are taken, what constraints are navigated, what tensions between ecologies must be reconciled in the course of a single working day.

The theoretical warrant for this synthesis is twofold. First, Xu et al.’s (2021) deep affordance foresight requires participants to model how each action reshapes the affordance landscape for subsequent actions. The narrative is not a prediction. It is a prospective simulation grounded in the relational constraints mapped in the preceding phases. Second, Ingold’s (2018) account of the relationship between perception and imagination provides deeper justification. In his formulation, imagination and perception alternate: imagination projects us forward into what is not yet formed, while perception restores our footing in what is actually there. The “Day in the Life” narrative enacts precisely this alternation. Participants imagine a future professional day, then test its plausibility against the relational constraints that they have mapped.

This plausibility testing takes the form of a built-in *reality check*: participants identify the systems, stakeholders and constraints that would push back against the action-possibilities described in the narrative. This acknowledges that while a future technology might afford a specific action in the class environment, the social or world environments may actively resist it. The reality check ensures that the emerging scenario is not an aspirational fantasy but a *plausible but unsettling* account; a narrative that reveals the genuine tensions school leaders will need to navigate. This is where Urueña’s (2024) concept of critical-reflective affordances becomes operative: the workshop design itself is a conceptual artifact that affords the problematization of technology, rather than its passive acceptance.

Phase 5: Second Pass - after “we’re done”

A final, distinct phase completes the process. Research on divergent thinking has consistently demonstrated a serial order effect: the most conventional and readily accessible ideas tend to surface first, while more original and divergent contributions emerge later as participants exhaust obvious categories and are forced to make more remote associative leaps (Beaty & Silvia, 2012). The *second pass* operationalizes this finding. When participants signal that they are finished, the facilitator asks for "just two or three more ideas" or offers a single targeted prompt, such as "Add one detail that makes this day uncomfortable." or "Include a decision that no longer feels fully human."

This prompt forces participants to dig past the familiar and expected. The results are often the most genuinely divergent insights the process produces, i.e. the action-possibilities that would not have surfaced without the additional pressure. In the context of Phase 4's narrative, the second pass pushes the "Day in the Life" beyond comfortable or optimistic projections and toward the more unsettling, less obvious affordances that the reconfigured environment may support. The Handbook directive, "Do not cut the second pass", reflects its operational importance. The most original contributions to the scenario are often generated here.

Conclusion: Foresight as professional agency

The failure of educational foresight can be corrected by treating the future as an ecology to be perceived rather than a destination to be predicted. By grounding the discourse in the Gibsonian theory of affordances, critiquing the semiotic alternatives offered by Norman and Keane and drawing on Ingold's relational ontology, we arrive at a method that shifts the focus from what technology *is* to what it *allows*. The affordance landscape, as theorized by Gordon (2023) and extended temporally by Xu et al. (2021), provides the scaffold within which school leaders can reason about future professional action without collapsing into speculation or determinism.

Meaning is not found in the tools themselves, but in the evolving relationship between the practitioner and their environment. For school leaders, the value of this method lies in its ability to transform the future from an external threat into a space of professional agency; a space where they can perceive, navigate and shape the preferable futures of education. The FUTRE method, as both a theoretical framework and a practical workshop process, is designed to afford precisely this: not the prediction of the future, but the cultivation of the perceptual skill required to act within it.

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